



National Transportation Safety Board

Office of Railroad, Pipeline and Hazardous Materials Investigations
Washington, D.C. 20594

Pipeline Operations Group Factual Report

**Natural Gas Fire
West Cote Blanche Bay
October 12, 2006
MAR07MM001**

A. Information

Operator: Chevron U.S.A. Incorporated
Type of Pipeline: 8-inch steel pipeline
Location: West Cote Blanche Bay
Near Cypremort Point (and Franklin, LA)
Date: October 12, 2006
NTSB Number: MAR07MM001
NTSB Accident: Athena 106

B. Pipeline Operations Group Members

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C. Accident Summary

On Thursday, October 12, 2006, about 11:55 a.m. central daylight time, the uninspected towing vessel *Miss Megan* was pushing two barges in the West Cote Blanche oil field in southern Louisiana, en route to a pile-driving site. Construction barge *Athena 106* was tied along the port side of deck barge *IBR 234*, and the *Miss Megan* was secured astern of *IBR 234*, pushing both barges. The *Miss Megan* was crewed by one licensed master and one deckhand. The construction barge had six workers on board, consisting of one foreman, one crane operator, and four deckhands. While the *Athena 106* was under way, the aft spud (a vertical timber or pipe extending through a well in the bottom of a river boat and used for mooring) released from its fully raised position. The spud dropped into the water, striking and severing a submerged high-pressure natural gas pipeline. The resulting gas release ignited, creating a fireball that engulfed the towing vessel and both barges. The *Miss Megan* master and four barge workers were killed. The *Miss Megan* deckhand and one construction worker survived. One construction barge worker is missing

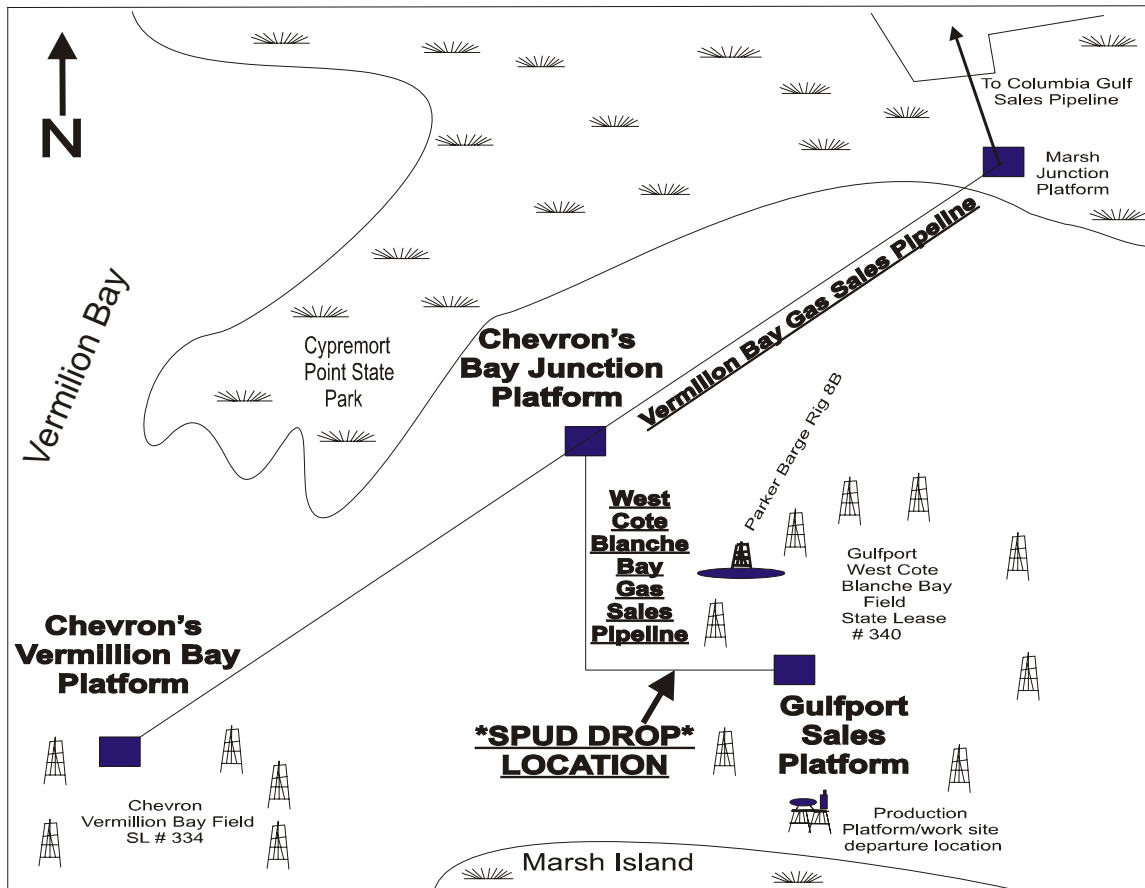


Figure 1. - Diagram of
Accident Site
Not to Scale

Spud Drop Location

When the accident occurred, the tow and barges had departed from a production platform/work site on the south side of the West Cote Blanche Bay production field and were traveling around the outskirts of the field, which was owned and operated by Gulfport Energy Corporation (Gulfport). The intended destination of the vessels was a drilling barge known as Parker Barge Rig 8B, which was located on the northwest side of the field. The vessels had traveled about halfway to the destination when the spud accidentally dropped. The spud went through, about 7 feet of water and about 3 feet of mud and contacted the pipeline.

(See Appendix A, B, C, D and E.)

E. Accident Time and Postaccident Actions

The pressure readings from Chevron's SCADA system helped determine the time of rupture to be about 11:55 a.m. The SCADA pressure readings determined that the natural gas pipeline was operating at about 700 psig. A pressure chart taken manually off a meter on the Gulfport Sales Platform substantiated the data. Chevron's SCADA system indicated that the pressure dropped from over 700 psig to about 400 psig by about 12:10 p.m.

About 11:55 the first of two Chevron crewboats (the other was at noon) were launched from a Vermillion Bay platform to assist at the scene of the fire. About 11:57 a.m., a Gulfport employee on Parker Barge Rig 8B, telephoned the Gulfport Energy's Operations Manager to report a fire on the tug and barge. About 12:06 p.m., a Grasso Production Management, Inc. (Grasso) employee who was on a platform¹ adjacent and attached to the Gulfport Sales Platform, saw the fire and telephoned onshore Gulfport management to alert them of the fire. Gulfport had hired Grasso to provide contract personnel to Gulfport to perform the day-to-day operations of the field. The same Grasso employee, whose title was lead operator, then instructed 2 fellow employees to travel to the accident site and assist. The 2 fellow employees, both operators, were checking wells within the field when they were instructed to assist. Gulfport management also called field personnel to tell them to do everything possible to help.

Just after 12:06 p.m., the Grasso lead operator noticed that Chevron's Gulfport gas sales meter (located on the Gulfport Sales Platform) was spinning rapidly and began to shut a hydraulically operated valve to shut off gas flow into the pipeline. About 12:10 p.m., Chevron's SCADA system pressure transmitter (along the Vermillion Bay Gas Sales line) showed that the pressure had fallen to 400 psig. The low pressure reading automatically activated an emergency shutdown of the Vermillion Bay field and the closure of the Vermillion Bay Gas Sales pipeline.² A check valve on Chevron's Bay Junction platform was in place to automatically prevent gas from back flowing from the downstream pipeline system.

¹ This platform was referred to as the Hanover platform. The Hanover platform supported the Gulfport Energy compressor station.

² These closures were confirmed by the SCADA computer.

About 1:05 p.m., Chevron personnel arrived by boat at Chevron's Bay Junction Platform and closed ball valve 8. Gulfport completed its shutdown of the entire field at about 3:00 p.m. About 5:10 p.m., Chevron personnel began to physically disconnect the ruptured West Cote Blanche Bay Gas Sales pipeline from the Vermillion Bay gas sales pipeline. Chevron personnel then proceeded to install blind flanges on the piping ends. The blind flange installation was completed at about 6:15 p.m.

Chevron estimated that about 973,000 standard cubic feet³ of natural gas escaped from the pipeline.

(See Appendix E, F, G, H and I.)

F. Pipeline History and Information

The pipeline was operated by Chevron U.S.A., Inc. (Chevron). Chevron referred to the ruptured pipeline as the West Cote Blanche Bay Gas Sales Line whereas Gulfport Energy referred to the ruptured pipeline as the Chevron Sales Line.

Chevron's records show that Texaco constructed the pipeline to serve as a gathering/production pipeline for the West Cote Blanche Bay field. A Texaco Contractor Bid Selection Letter indicated that the bid for construction of the pipeline was approved in 1966. The pipeline is part of a gas gathering system that serves the West Cote Blanche Bay Field and the Vermilion Bay field.

On July 1, 1987, Texaco sold a 50 percent interest in the pipeline and the West Cote Blanche Bay production field to Tesla Resources Inc., predecessor to Gulfport. (There were some other entities involved in the transaction including Pelham Partners Ltd.) Gulfport later acquired full ownership of the field and a full 50 percent interest in the pipeline, the portion not owned by Texaco.

In 2001, Chevron merged with Texaco⁴ and Texaco's 50 percent ownership of the pipeline stayed with the new company.

The pipeline was a 8.625-inch outer diameter, X46 grade, ERW⁵ steel pipeline with a 0.250-inch wall thickness. The pipeline was manufactured in Bethlehem Steel's facility at Sparrows Point, Maryland in November 1965. The pipeline was externally coated with a spiral wrapped asphalt-type material, followed by a 1.5-inch thick concrete coating.

According to a post-accident dive survey, the pipeline had about 3 feet of cover when the accident occurred. Texaco had performed a Depth of Cover Survey in 1995 that

³ A cubic feet of gas at standard temperature (60° Fahrenheit) and pressure (14.7 pounds per square inch, absolute).

⁴ The agreement to merge was announced on October 16, 2000.

⁵ Electronic resistance welded

showed a burial depth of between 2 and 2 1/2 feet. The pipeline was cathodically protected with a sacrificial anode. A cathodic protection survey was performed August 24, 2005; voltage readings of -1.323 and -1.069 were recorded, which met the criteria given in API RP0176-2003 *Corrosion Control of Steel Fixed Offshore Structures Associated with Petroleum Production*. After the Katrina hurricane, in February of 2006, the pipeline was pressure tested. The pipeline held a pressure of 1,000 psig for 4 hours. Since the 2006 pressure test, Chevron reported that the pipeline did not have any need for repair and there were no problems up until the rupture on October 12, 2006.

At the point where it was contacted, the pipeline was running roughly east-to-west under the bay. To the west of where the pipeline was contacted, the pipeline took a 90 degree turn to the north. At the eastern end of the pipeline, the pipeline began at a platform called the Gulfport's Sales Platform. The Gulfport Sales Platform was located within Gulfport's West Cote Blanche Bay production field (State Lease 340). At the western end, the pipeline terminated at Chevron's Bay Junction Platform. At the Bay Junction Platform the pipeline tied into Chevron's Vermilion Bay Gas Sales pipeline. (See Appendix A, J, K, L, M, N, O and P) (Also see Stress Engineering Nondestructive Analysis of Gas Sales Line Pipe Evidence from the West Cote Blanche Bay Pipeline Rupture Incident)

G. Gulfport Sales Platform

At the Gulfport Sales Platform, Gulfport routed extracted natural gas through a gravity type separator and then transported the gas at about 60 psig to parallel compressors (each with three 1600 HP engines driving a 3-stage reciprocating compressor). The parallel compressors (the Gulfport compressor station) were on an adjacent platform, the Hanover platform, slightly higher and attached to the Gulfport Sales Platform. The compressor discharge pressures were at about 1000 psig. The compressed gas then went through another gravity type separator and then a glycol dehydrator. The compressed gas was then injected back into oil producing wells to aid in oil production (gas lift). Excess natural gas not needed for oil production flowed through a backpressure regulator, set at 940 psig, before being routed into the pipeline. At the time of the accident, the pipeline was operated at about 700 psig.

The Gulfport Sales Platform and the attached Hanover Platform had metering facilities and pressure and flow gauges.
(See Appendix A and P)

H. Chevron's Bay Junction Platform

At Chevron's Bay Junction Platform, Chevron's West Cote Blanche Bay Gas Sales pipeline tied into its Vermilion Bay Gas Sales pipeline. Just before the tie in, the West Cote Blanche Bay Gas Sales pipeline went through a ball valve identified as valve 8 and then a check valve. The flapper had been removed from the check valve just downstream from ball valve 8 to allow bi-directional flow through the West Cote Blanche Bay Gas Sales pipeline. Just downstream of the tie in, also on the Bay Junction

Platform, a check valve was adjacent to another ball valve known as ball valve 6. The purpose of the check valve was to prevent natural gas from back flowing from Chevron's downstream Ivanhoe gas gathering pipeline system to both the West Cote Blanche Bay Gas Sales pipeline and the Vermilion Bay Gas Sales pipeline.

(See Appendix Q)

I. Postaccident Pipe Recovery

Gulfport hired a diving company, Caldive International Incorporated (Caldive), to inspect the pipeline and the crater on October 13, 2006. The underwater visibility was described as very poor. Diver's found a 3 ½ foot deep crater centered by the spud. The ground around the crater wall was found to be muddy clay. A diagram completed by Caldive showed the spud between two fractured ends of the gas sales pipeline. Caldive performed a second survey on October 19, 2006, after which they again produced a diagram that showed the spud between two fractured ends of the gas sales pipeline.

Athena Construction, L.L.C., the owner of the barge, hired a diving company, River Services Company, to look at the subsurface damage on October 13 - 14, 2006,. In its report, the River Services Company stated: "the west side of the 6-inch [8-inch] pipeline is making contact with the spud" and "the aft spud apparently made contact and cut a 6-inch [the 8-inch] pipeline."

Chevron then contracted to have the pipe recovered and the recovery ended on November 17, 2006. Two lengths of pipe, an eastern piece and a western piece, of approximately 50-feet each were recovered from each side of a transverse (circumferential-like) fracture.

At the request of NTSB, Chevron arranged to have the pipe examined and tested. The Chevron contractor, Stress Engineering Services, Inc. completed its report on February 27, 2007. "The objectives [of the report] were to document the overall condition of the pipe, including fracture and weld locations; identify fracture mechanisms, directions, and origins; inspect for foreign object damage and pre-existing conditions; measure the pipe diameter and wall thickness; measure the hardness of the steel; and visually characterize external coatings."



Picture of the Transverse Fracture on the East Piece of the Gas Sales Pipeline (Dent on pipe exterior not visible)

The Stress Engineering Services, Inc. report indicated that the “rupture event produced both a transverse fracture and a longitudinal fracture in the pipe. The transverse fracture was 2.1 feet to the East of a circumferential field girth weld located in the western piece of pipe. The longitudinal fracture extended from the transverse fracture to the East for 43.4 feet. The report identified a reversal in the direction of fracture surface markings and how the reversal “is consistent with a fracture origin area in the bend [in the longitudinal fracture surface].” The report also noted “Internal and external corrosion were insignificant.”

(See Appendix B, C and D) (Also see Stress Engineering Services, Inc. Nondestructive Analysis of Gas Sales Line Pipe Evidence from the West Cote Blanche Bay Pipeline Rupture Incident)

Pipeline Operation Group Report Writer

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March 7, 2007